Connect to energy efficiency

Smart Panels, digitised electrical switchboards for buildings

www.schneider-electric.com/smart-panels

Life Is On | Schneider Electric

Improve building efficiency and customer satisfaction

Ensuring a good energy supply is crucial for building owners and managers. If the power goes out, business grinds to a halt. At the same time, energy management is a huge – and often overlooked – source of potential savings.

30% of a typical office building's costs are energy-related

Source: US Environmental Protection Agency, 2015

Smart Panel switchboards from Schneider Electric help building owners and managers achieve savings and increase reliability in both new and existing structures. They also offer a swift return on investment, thanks to reduced energy costs and smarter management of electrical infrastructure.

Smart Panel switchboards make it possible to:

- Analyse energy consumption and optimise costs
- Prepare for energy audits
- Handle daily electrical challenges as well as plan for the long term
- Improve power supply reliability for occupants

See what other Schneider Electric customers think about Smart Panel switchboards.

http://tv.schneider-electric.com/site/schneidertv/search.cfm?s=smart+panels&args=ww/en

Save on energy costs and prepare buildings for the future

Every bit of energy saved is money that can be used elsewhere. Smart Panel switchboards from Schneider Electric make it easy to discover savings opportunities in buildings, as well as capitalise on them by measuring and analysing energy usage.

Improve energy efficiency

Smart Panel switchboards automatically monitor consumption at the sources, providing clear visibility into how and where a building is using its energy. Together with Schneider Electric software and services, they also perform intelligent cross referencing of energy usage by zone (offices, lobby, storage, parking, etc.) and by usage type (lighting, heating, hot water for sanitation, etc.).

This provides the data needed to:

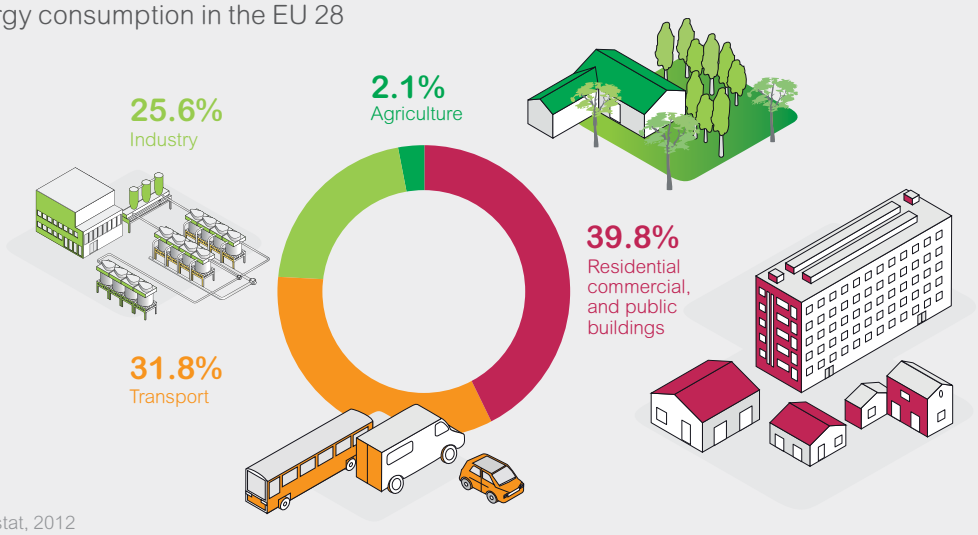
- Detect usage issues, such as demand peaks, waste, leakages
- Forecast energy usage and plan for the long term
- Keep occupants informed of consumption trends and savings

Energy Efficiency

Use less power while maintaining the same level of comfort and safety for occupants

Buildings consume more energy than any other sector of the economy

Final energy consumption in the EU 28



Source: Eurostat, 2012

Building efficiency is quickly becoming the norm

Energy efficiency directives for buildings are gradually being incorporated into national regulations and building codes. At the same time, energy performance certificates, like those issued for electrical appliances, are being applied to air conditioners and lighting equipment. In the European Union, for example, the Energy Performance Buildings Directive and EN 15232 standard are already impacting building developers and owners.

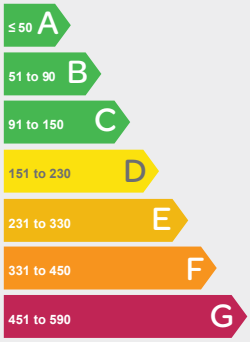
Schneider Electric™ switchboards put buildings ahead of the trend. Energy audits and performance certifications are significantly simpler when owners and managers have clear, real-time visibility of energy consumption.

30% of energy is wasted in commercial buildings, on average

Source: International Energy Agency, 2015. *IEA member countries

Energy efficiency categories for Building Automation and Control

Smart Panels provide actionable insight that helps increase a building's energy efficiency



Maintain equipment cost-effectively

Building tenants are less tolerant of outages than ever. Full-time power availability is a necessity. To ensure comfort and efficiency, power dependability levels seen in hospitals or airports are now becoming required in commercial facilities.

Smart Panels inform operators of trends, events, and alarms, and allow them to track power quality in real time, wherever they are

Meanwhile, the risk of power outages is growing. Grids around the world are under stress due to growing energy demand and limited growth of new generation capacity.

Proven expertise in power quality management

As the global expert in energy management and industrial automation, Schneider Electric provides solutions for reliable, high-quality power all over the world. Decades of experience with critical power applications has now been applied to solutions suitable for commercial facilities.

Smart infrastructure, smart management

Smart Panels from Schneider Electric, together with best-in-class software and services, make it easier to meet the challenges of ensuring power availability. By measuring performance data and enabling analysis, building owners and managers can anticipate and prevent issues throughout the equipment life cycle.

An intelligent, highly planned approach to infrastructure management is possible thanks to the advantages provided by Smart Panels.

Increase property values thanks to reduced operating costs, greater occupant comfort, and regulatory compliance

Corrective maintenance

This includes normal and corrective maintenance, undertaken as needed. Smart Panel enabled architectures reduce the time and cost involved in daily network management.

Example:

In case of a pre-defined event, the Smart Panel automatically sends emails. Technical staff can diagnose the incident remotely, decide upon intervention (local or remote), act, and monitor the results.

Preventive maintenance

In the medium-term, the information available enables preventive maintenance based on wearout indications and warnings sent via the digital system. Spare parts management is also simplified.

Example:

Circuit breakers notify of overloads or earth-leakages, before tripping thresholds are reached.

Predictive maintenance

Smart Panels provide critical data to Schneider Electric software, delivering the insight needed to plan long-term, making investment planning and life-cycle management much easier. Advanced data processing enables predictive maintenance.

Example:

Thanks to computation of historical data and monitoring of load profiles, maintenance and upgrades can be scheduled with total efficiency.

1 MEASURE

2 CONNECT

3 SAVE

Energy management has never been simpler

1. MEASURE

Embedded and stand-alone metering & control capabilities

2. CONNECT

- Integrated communication interfaces
- Ready to connect to energy management platforms

3. SAVE

- Data-driven energy efficiency actions
- Real-time monitoring and control
- Online access to energy and site information

1 MEASURE

Switchboards are the most convenient location to collect data about electrical supplies throughout the building.

Schneider Electric provides best-in-class devices for electrical protection, control, and measurement, as well as efficient switchboard build-up systems.

We also create new, digital possibilities through better connectivity, thanks to the Enerlin'X system components embedded in our power operating devices.

Power and energy metering

PowerLogic meters

Monitor key distribution points 24 hours a day, from generators, substations, and service entrances, to mains, feeders, and loads. Help improve network reliability by tracking real-time power quality, equipment status, trending loads, and logging events and alarms.

Acti 9 energy meters

Energy meters for a variety of applications: single-phase (iEM2000 series) or three-phase (iEM3000 series) circuits, basic kWh meters for elementary applications to MID-compliant meters for billing applications, and advanced energy meters capable of measuring a variety of electrical parameters.

Power supply and protection monitoring, metering

Masterpact, Compact,
circuit breakers and switches
Offer reliable protection as well as support energy management by providing energy consumption data, equipment status, and operational support information.

Acti 9 circuit breakers, residual current devices, surge arresters
Each Acti 9 protection device contributes to electrical supply reliability. Easy-to-fit auxiliaries transmit real-time status to the Enerlin'X system and additional RCA modules enable digitally controlled resetting after a trip.

Circuit and load controls

Acti 9 contactors and impulse relays, remote controlled
Compact and Masterpact
To improve user comfort, lighting or other loads are switched on and off, separately or all together, via the digital system.

2 CONNECT

Connecting is easy with Smart Panels. You start by plugging in via Ethernet LAN.

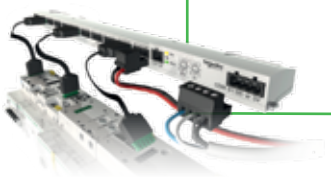
Ethernet is today the most widespread communication protocol in professional buildings, providing fast data transmission. Thanks to the Enerlin'X digital system, switchboards can be connected via Ethernet like any other device through an RJ45 socket.

Enerlin'X digital system

Fitted inside the switchboards, Enerlin'X components aggregate electrical and other energy data from across your building.
The design of Enerlin'X is largely inspired by feedback from professionals working with switchboards. They asked for:

- **Grouping of similar functions** in the smart components (e.g. Acti 9 Smartlink)
- **Error-free cabling, fast** connection-disconnection
- **Space-savings in the enclosure**

Acti 9 Smartlink



- Digital interface for Acti 9 or third-party devices
- DIN rail clippable, no extra space required; 100% prefabicated connections
- 2 versions: Modbus SL slave or Ethernet + Modbus SL
- Automatic e-mail sent upon critical events (configurable)
- Embedded web pages for energy monitoring & control master

Com'X 200 energy data logger

- Collects data from electrical and other devices throughout the building
- Delivers batches of data ready to be processed by StruxureWare™ solutions and online services

Com'X 510 energy server

- Collects data from electrical and other devices throughout the building
- Provides detailed and global views of energy consumption as soon as connected, with data accessible via web browser

Enerlin'X IFE

- Ethernet communication interface for power circuit breakers
- Embedded web pages for energy control, and maintenance
- Modbus master, with automatic detection and configuration of "slave" devices
- Switchboard server aggregates, computes, and displays data from all devices in the switchboard, connected either by Modbus SL or Ethernet
- Automatic e-mail sent upon critical events (configurable)

Enerlin'X IO

Provides tailored additional functions such as withdrawal cradle position

Enerlin'X IFM

Modbus connection and data collection for one Compact or Masterpact device

2 CONNECT

Tested, validated, documented architectures make it easier to connect

Smart Panels have been certified through Schneider Electric's "TVDA" quality process.

Tested in performance labs by experts, in all possible configurations

Validated full functional compatibility of devices

Documented, with user guide, predefined CAD panel designs & wiring diagrams

As a result, Smart Panel digital architectures are validated and ready to implement. Technical guides available online explain, step-by-step, how to arrange Enerlin'X components and transform regular switchboards into connected Smart Panels.

Design

Follow a TVDA methodology to design the digital parts of your switchboard, and deliver features that exceed your customers' expectations.

Select

Create the exact list of items (auxiliaries, interfaces, connections) to collect data from each breaker or meter in the switchboard.

Order

Find a full description of each and every Enerlin'X device, together with tips and recommendations to get the best performance.

Assemble

A method to design and assemble digitised switchboards, optimising use of space, electromagnetic compatibility, and Prisma system convenience.

Ecoreach software: digital management of electrical distribution

Ecoreach is the final component of Enerlin'X digital system. It provides support for management of the entire digitised electrical network, by handling all functions required at each stage of setup, commissioning, and maintenance.

Project creation and management

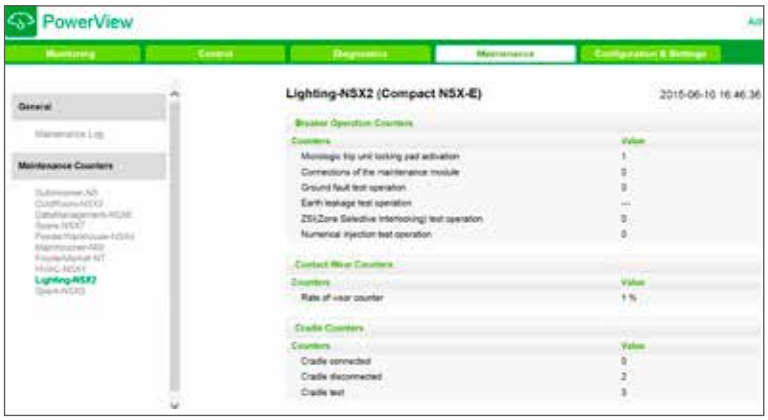
- Performed on- or offline
- Description of electrical and digital networks
- Preparation of power device settings
- Storage of project data, with attachments

Digital connection and commissioning

- Auto-detection of all Schneider Electric devices in a building
- Auto-assignment of IP / Modbus address
- Digital architecture check sequences, with reports

Electrical network startup

- Automatic upload of prepared, offline settings into Compact, Masterpact, and PowerLogic devices
- Final adjustments, tests, and checks, with report delivery



Operation and maintenance

- Consistency checks and change tracking
- Preventive and predictive maintenance warnings
- Enerlin'X device firmware upgrades

3 SAVE

Schneider Electric serves the needs of any building, regardless of size and criticality, and helps find savings opportunities.

Our solutions provide different mixes of energy, network, and asset management features tailored to each site. Clear visibility of the energy supply system and consumption is provided by locally installed software while online services offer improved mobility and convenience.

Enerlin'X FDM128

- Full monitoring & control of 8 power devices thanks to LCD touchscreen fitted on the front face of the Smart Panel
- Access to switchgear settings, status, and measurements
- Auto discovery of Modbus SL connected devices
- Simple installation, with just a Ø22 mm hole on the switchboard front panel

Powerview

User-friendly web pages

User-friendly displays of all data stored in Enerlin'X devices, accessible via Ethernet and viewable with web browsers. Includes user-configurable e-mail notification feature.

Remote access

Powerview webpages accessible anytime anywhere through secure, private Internet access. User-configurable e-mail notification feature also included.

Com'X 510 web pages

All-in-one energy management for small and medium buildings, allowing you to detect the most important opportunities for savings.

- Provides dashboards and historical trend charts for consumption, viewable via web browser
- Connection to network via WiFi or Ethernet
- Aggregates electrical data with gas, steam, air, water

Facility Hero

A handy, digital maintenance and asset management logbook

- Available via online platform and mobile app (iOS™ & Android™).
- Freeware with optional premium features
- Real-time information available anytime, anywhere
- Instant notifications and sharing of expected and unexpected events

Facility Insights Services

These service packages improve facility operation, energy costs, and network and asset management

- 4-tiered suite, with options suitable for small and medium buildings, for industry, retail, public and healthcare sectors
- Fully compatible with Smart Panels, with option for hardware installation
- Cloud-hosted platform providing access to all energy and maintenance data
- Supported by network of "EcoXpert" partners certified by Schneider Electric

Solutions for large and power-critical buildings

Schneider Electric offers a number of Smart Panel-enabled solutions for large and power-critical buildings as well. These solutions provide powerful tools to supervise and maintain building infrastructure and improve energy efficiency.

Examples:
Resource Advisor

Power Monitoring Expert V8

Power and energy management in a hotel chain

This chain operates over 1,000 hotels with about 130,000 rooms in 59 countries. Around 85 per cent of its locations are ISO 9001 certified.

Our customer offers its guests a bold quality service commitment, making power and energy management extremely important.

"I was doubtful about the final cost to setup this system. But there was no bad surprise at all. And our facility managers keep it working without any problem".
Financial director

The challenge

- Ensure and monitor customer comfort across all branches
- Boost confidence regarding customer health and safety, and ensure regulatory compliance
- Optimise energy and fluid consumption, to save money and enable green marketing

Increased comfort and safety of guests

When an issue occurs that might impact guest comfort and safety, hotel staff are immediately informed by an e-mail sent automatically by Smart Panels.

Comfort and safety dashboards are widespread

Every staff member has permanent access to a real-time comfort and safety dashboard showing:

- Deep freezer temperature
- Key values of heating and air conditioning systems
- Hot water temperature
- Air temperature and humidity on each floor

"We understood why we regularly had penalties from energy providers. The rated power was exceeded everyday for some minutes, when all rooftops were starting. We rescheduled all automatic equipment, and we could even lower our rated power subscription".
Hotel director

Best practices shared across the company

Every three months, hotel managers meet together with corporate technical and financial directors to share best practices and compare improvements. One manager said: "We decided to equip a pilot site with solar water heating. By relating its energy consumption to the other sites, we could calculate the savings and payback, and decide upon investing in this equipment for other sites".

Full staff involvement

Each hotel manager and his technical staff have full-time access to details of energy consumption. The entire staff is informed about energy and water savings. The system detects and flags abnormal consumption, and breaks electrical consumption down into:

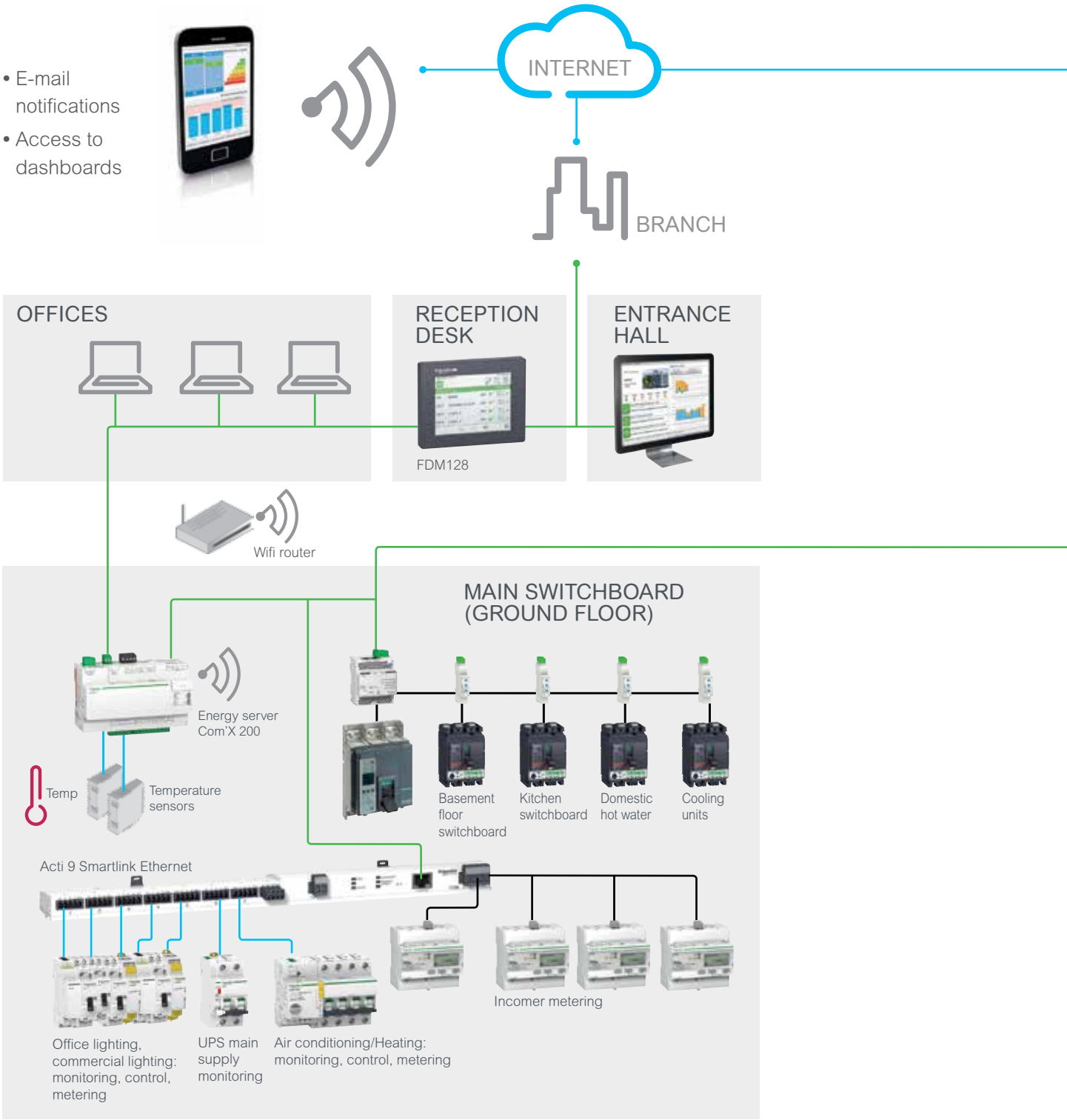
- HVAC
- Food conservation (deep freezers and fridges)
- General lighting and lifts
- Cooking and dishwashing equipment
- Guest rooms

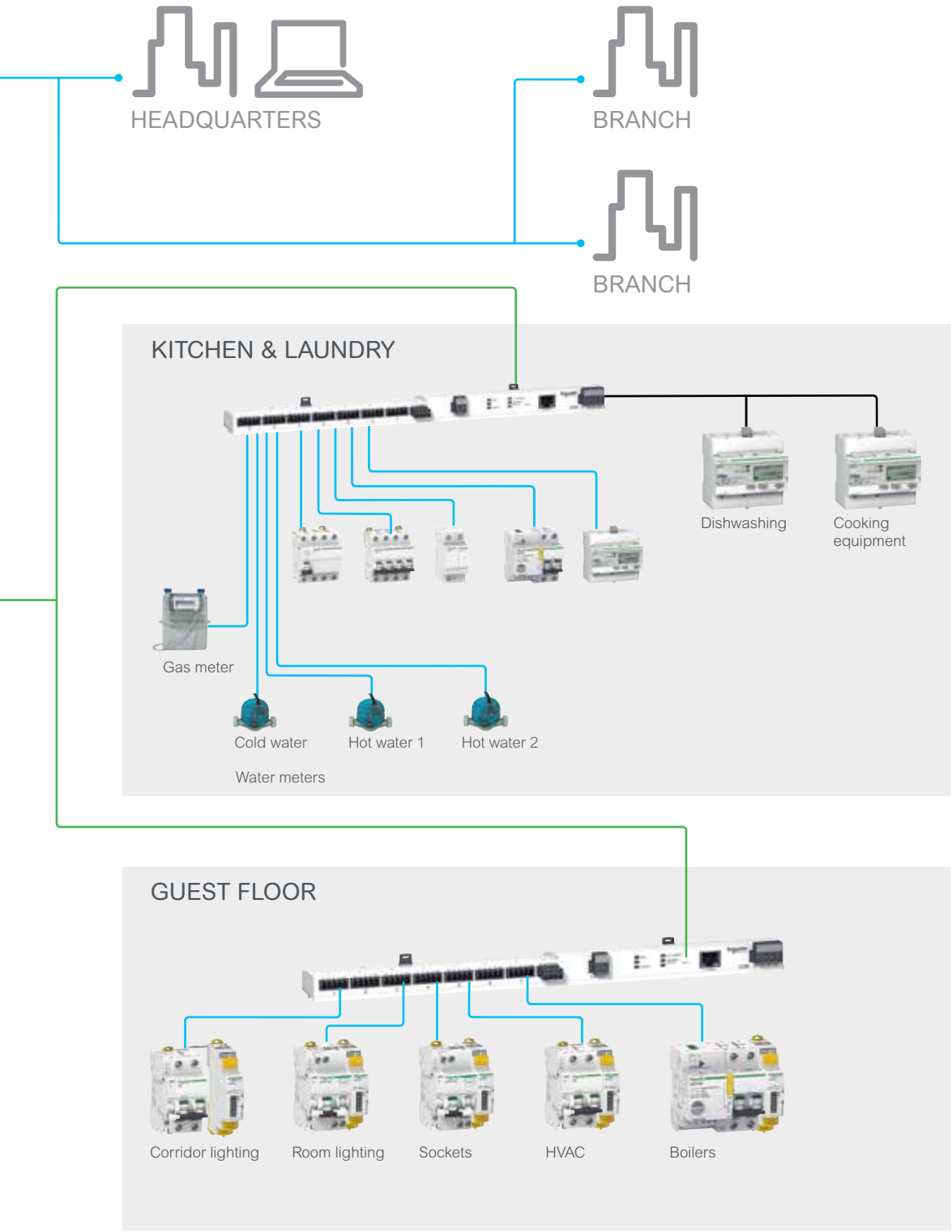
Sustainability information and green marketing

Screens inform guests of environment-friendly behaviors and display recent resource savings achieved thanks to their support and awareness.

Power and energy management in a hotel chain

Architecture of the solution





"Most surprising was how each local electrical contractor could replicate and connect the system in each hotel, without much technical coordination".

Corporate energy officer

Global expertise and local support for your business

Schneider Electric can help improve energy efficiency, optimise performance, and achieve sustainability in buildings practically anywhere in the world. We offer assistance with project execution, from planning to commissioning, as well as full life-cycle support.

For electrical contractors, designers, and consultants as well as panel builders, we offer professional support that helps create new business opportunities.

Thanks to our international network of EcoExperts, certified, experienced service professionals are available locally to help you implement Smart Panels in your business.

Schneider Electric at a glance

175+
Years of expertise

170,000+
Employees in more than 100 countries

6,700+
Schneider Electric-certified field service representatives globally

1,000+
Panel builder partners around the world

Sustainability is a shared responsibility

Global demand for energy is rising due to population, economic, and industrial growth. At the same time, we must halve greenhouse gas emissions so as to reduce their catastrophic effects on global warming and climate change. As individuals, companies, industries, and governments, we are all stakeholders with a commitment to safeguard our shared future through responsible energy consumption.

37% is the forecast growth of global demand for energy by 2040

Source: International Energy Agency, World Energy Outlook 2014

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About Schneider Electric

Schneider Electric is the global specialist in energy management and automation. With revenues of €25 billion in FY2014, our 170,000 employees serve customers in over 100 countries, helping them to manage their energy and process in ways that are safe, reliable, efficient and sustainable. From the simplest of switches to complex operational systems, our technology, software and services improve the way our customers manage and automate their operations. Our connected technologies reshape industries, transform cities and enrich lives.
At Schneider Electric, we call this Life Is On.

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